

**Amendment to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A volume allocating method in a storage management system for managing operation of a storage device connected via a network by use of a storage management server, the volume allocating method comprising:

receiving, via the network, a condition for allocating a volume designated by a client;

obtaining information on operation history of the volume from a memory device for storing, as history, information including a performance value of a disk group obtained upon actually operating the storage device;

obtaining from the storage device information on specification values including ~~the a~~ performance value of the storage device;

~~assuring obtaining~~ a performance margin and ~~determining using the~~ performance margin to determine a candidate of an allocable volume in accordance with the received condition for allocating the volume based on the information on the operation history of the volume and the information on specification values of the storage device;

transmitting information on the volume of the ~~allocated~~ candidate to the client;

receiving information on volume allocation selected and transmitted from the information on the volume of the ~~allocated~~ candidate in the client; and  
allocating the volume to the storage device in accordance with the information on the volume allocation.

2. (Original) A volume allocating method according to Claim 1, further comprising:

storing previously, in the memory device, a plurality of policies one of which is selected by designating the condition for allocating the volume in the client, including information on at least the performance value and an operating time zone; and

storing previously, in the memory device, information on a forecasted performance value per unit time which is calculated from a capacity, a theoretical performance value, and information on the operation history of the volume of the disk group as an allocation target.

3. (Original) A volume allocating method according to Claim 2, wherein the step of determining the volume candidate comprises:

obtaining the performance margin based on the theoretical performance value and the forecasted performance value per unit time of the volume included in the disk group;

calculating and subtracting the performance value designated by the policy from the obtained performance margin; and

determining, as the allocation candidate, the volume of the disk group when the obtained value is positive as a result of the calculation.

4. (Currently Amended) A storage management server for managing the operation of a storage device connected via a network, the storage management server comprising:

- a database for operation history which stores, as history, information including a performance value of a disk group obtained upon operating the storage device;

- a database for a volume performance value which stores information on specification values including performance, reliability, and a capacity of the storage device obtained from the storage device;

- a policy database which stores information on policies including the performance corresponding to a plurality of set policies;

- first processing means which ~~calculate~~calculates a forecasted performance value from the information on the performance value of the disk group stored in the database for operation history;

- second processing means which ~~obtain~~obtains a performance margin, based on a theoretical performance value of the volume and the forecasted performance value obtained by the first processing means; and

- volume determination processing means which determines an allocation candidate for allocating the volume in accordance with a calculation result of the second processing means.

5. (Currently Amended) A storage management server according to Claim 4, wherein the first processing means ~~calculate~~ calculates the forecasted performance value per unit time based on information on the performance value obtained from the database for operation history, and

wherein the database for a volume performance value stores information on the forecasted performance value per unit time obtained by the first processing means, corresponding to the disk group.

6. (Currently Amended) A storage management server according to Claim 4, wherein the second processing means ~~perform~~ performs processing for obtaining a difference between the performance margin per unit time and a designated performance value stored in the policy database, and

wherein the volume determination processing means ~~determined~~ determines, as the allocation candidate, the volume which is obtained by the second processing means and has a positive difference.

7. (Currently Amended) A storage management server according to Claim 4, further comprising:

~~means which transmit~~ means for transmitting information indicating a volume candidate determined by the volume determination processing means so as to display the information on a client connected to the storage management server; and

means ~~which receive~~ for receiving the information on the volume allocation selected by the client in accordance with the displayed information.

8. (Currently Amended) A system having a storage management server according to Claim 4,

wherein the storage management server has a client connected thereto via the network, and

wherein the client comprises:

means ~~which designate and inputting~~ for designating and inputting a condition for allocating the volume;

~~display means which display~~ means for displaying information indicating the volume candidate determined by the volume determination processing means; and

means ~~which transmit,~~ for transmitting to the storage management server, the information on the volume allocation selected from the volume information of the allocation candidate displayed on ~~display means~~ the means for displaying.

9. (Original) A program for selecting and generating a volume candidate functioning on a storage management server, the storage management server comprising a database on operation history for storing, as history, information including a performance value of a disk group obtained by operating a storage device connected via a network, a database for a volume performance value for storing information on specification values including performance, reliability, and a

capacity of the storage device, obtained from the storage device, and a policy database for storing information on a policy including the performance corresponding to a plurality of set policies, the program for generating the volume candidate comprising:

a first processing step of calculating a forecasted performance value from the information on the performance value of the disk group stored in the database on the operation history;

a second processing step of obtaining a performance margin based on a theoretical performance value of the volume and the forecasted performance value obtained in the first processing step;

a volume determination processing step of determining a candidate for allocating the volume in accordance with a calculation result of the second processing step; and

a step of generating information for displaying a volume candidate from information based on the volume determination processing step, so as to display the volume candidate on a client connected to the storage management server.

10. (Currently Amended) A volume allocating method according to Claim 1, further comprising, ~~in the storage management server:~~

previously storing, in a memory device of the storage management server, a plurality of policies including information on at least the performance value and the operating time ~~zone; and~~ zone;

previously storing, in the memory device of the storage management server,  
information on the forecasted performance value per unit time calculated from  
information on the operation history of the capacity, theoretical performance value,  
and volume of the disk group as the allocation ~~target~~, and target;

~~the volume allocating method further comprising, in the client:~~

displaying, on a display screen of the client, information on the plurality of  
policies transmitted from the storage management ~~server~~, and server;

selecting one policy by use of input means of the client, from the plurality of  
policies displayed on the display ~~screen~~, and screen;

~~the volume allocating method further comprising:~~

displaying, on the display screen, volume information of the received allocated  
candidate;

selecting and designating one of allocated candidates displayed on the  
display screen; and

transmitting, to the storage management server, information on the  
designated allocated candidate.

11. (Currently Amended) A storage management server for managing  
operation of a storage device connected via a network, comprising:

a database for operation history which stores, as history, information including  
a performance value of a disk group obtained upon operating the storage device;

a database for a volume performance value which stores information on specification values including a performance ~~on~~value of the storage device;

processing means which ~~calculate~~calculates a forecasted performance value from the information on the performance value of the disk group stored in the database for operation history and which obtains a performance margin per unit time based on the obtained forecasted performance value and a theoretical performance value stored in the database for a volume performance value;

volume determination processing means which determine a candidate for allocating a volume in accordance with a calculation result of the processing means; and

means for transmitting, to a client connected to the storage management server, information indicating a volume candidate determined by the volume determination processing means.

12. (Original) A storage management server according to Claim 11, further comprising:

a policy database which stores information on a policy including the performance corresponding to a plurality of set policies.

13. (Currently Amended) A storage management server according to Claim 11, wherein the database for a volume performance value stores a disk group name,



reliability, a capacity, a theoretical performance value, and the forecasted performance value corresponding to the ~~set-disk-disk~~ group.

14. (Currently Amended) A storage management server according to Claim 11, wherein the database for operation history stores a disk group name and an actual estimated performance value corresponding to the ~~set-disk-disk~~ group.

15. (Original) A storage management server according to Claim 12, wherein the processing means comprises:

first processing means which obtain the unit time from the designated policy and which segment the history information stored in the database on the operation history per unit time;

second processing means which obtain an average of the segmented data and which obtain the forecasted performance value;

third processing means which obtain the performance margin by subtracting the forecasted performance value from the theoretical performance value per unit time and which subtract the performance value designated by the policy from the performance margin per short time; and

fourth processing means which determine whether or not the subtracted value is positive and which determine the volume of the target disk group if the subtracted value is positive.

16. (Currently Amended) A storage management server according to Claim 11, wherein the client comprises:

means ~~which receive~~ for receiving information for allocating the volume selected from the received volume candidates by the client; and

means ~~which transmit~~ for transmitting, to the storage device, the information for allocating the volume received by the receiving means so as to allocate the volume of the storage device.

17. (Original) A system according to Claim 8, wherein the display means of the client displays the information indicating a name, performance, and reliability of the disk group as the volume candidate.

18. (Original) A volume allocating method according to Claim 1, further comprising:

displaying information including at least the performance value and reliability corresponding to the policy, an index for selecting a memory capacity, and an index for selecting the policy on the display screen of the client so as to designate the condition for allocating the volume by the client.

19. (Currently Amended) A volume allocating method in a storage management system, comprising:

receiving a condition on requested performance per operating time zone of a volume designated by a client;

referring to history information obtained from a result of actually operating disk groups;

calculating a performance margin of the disk group upon allocating the volumes of the disk groups based on the history information,

obtaining a volume candidate as an allocation target from the disk groups in accordance with a ~~calculation~~-result of calculating the performance margin and presenting the volume candidate to the client; and

receiving and storing one volume candidate selected by the client.

20. (Original) A volume allocating method in a storage management system according to Claim 19, further comprising the step of:

displaying the volume candidate as the allocation target on a display screen of the client and selecting one volume candidate of the displayed contents.